BIOL-UA 37 At the Bench Applied Cell Biology

Instructor:
Ignatius Tan

Course Description:
Various methodology used to study cell structure and function will be examined. In the laboratory the students will study the fundamentals of cell biology and the experimental approaches used to examine the cell. Experimental topics will cover cellular, subcellular and macromolecule localization, biochemical analysis of the cell, and cell culture techniques. Discussion will also cover protein and antibody microarray techniques used in proteomics.

Pre-requisite:
Molecular and Cell Biology II (BIOL-UA 22)

Textbook and Required Materials:
N/A

Grading:
2 lecture lab exams  60%
Paper  15%
Presentation/discussions  15%
Class participation/attendance  10%

Topics:
Vectors for the propagation, manipulation and delivery of specific DNA sequences into a host cell
Transform bacteria with specific vector
Isolate transformant and setup mini-culture
Mini-plasmid prep
Agarose gel of mini-plasmid prep
Introduction to microscopes, culturing cells
Cell culture and transfection
Setup culture cells for immunofluorescence and cell fractionation
Transfect cultured cells with vectors
Fix cultured cells for confocal cell fractionation of cells
Immunofluorescence and cell fractionation
Cell fractionation of cells - part II
RNA and protein extraction
Immunofluorescence I
Immunofluorescence II
Immunofluorescence III
Protein analysis
Extract mito DNA
Agarose gel on mito DNA
Design probes for RT-PCR
Analysis of mito DNA
Genomics and proteomics
PCR amplification of message, RT-PCR
Agarose gel of amplicons proteomics
Grp I